

## Weather-related faults in high-voltage power lines





## Description

In 2006, Central Networks, one of the top five UK electricity utility companies, sought Met Office expertise to identify the effects of severe weather (e.g. lightning and high winds) on its 11 kilovolt distribution network. The company wished to clarify the correlation between the number of faults and the weather as well as detect possible changes over time in the weather-resilience of its network due to investments in the network infrastructure.

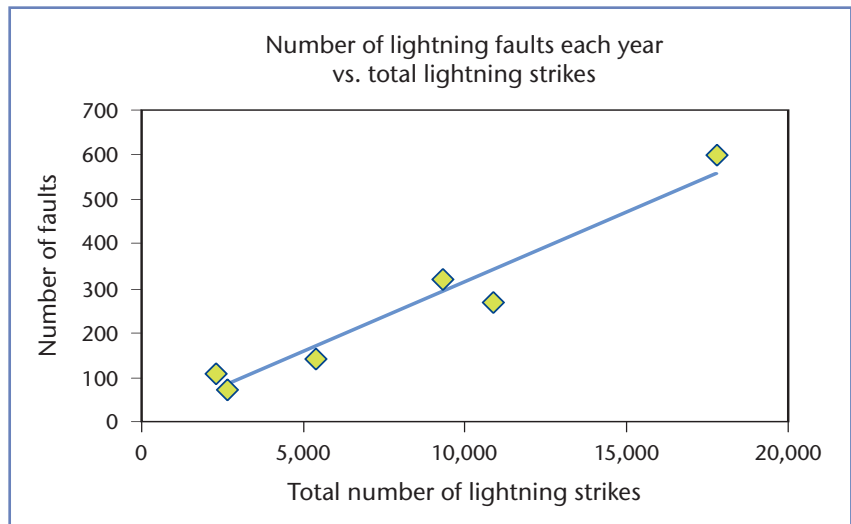
Central Networks had already funded an initial study in 1998 which found a method for deriving the relationship between extreme weather events and observed faults.



Using these relationships enabled the expected number of faults to be derived from the given weather events for subsequent years. Since then, the Met Office has provided the company with annual updates of the analyses of faults versus weather.

The studies have shown that there are correlations between lightning, extreme gusts and faults in the distribution network, and that in most years the majority of weather-related faults are wind-related.

These relationships have been used by the company to monitor the weather-resilience of the network over time, and to confirm the benefits of its investments in network infrastructure.



## Firm/Consultant's experience

**Project/assignment name:**

Weather-related faults in high voltage power lines

**Project country:**

UK

**Duration of assignment:**

6 weeks

**Name of client:**

Central Networks

**Total number of staff-months on the assignment:**

1 man-month

**Project address:**

Central Networks  
Herald Way, Pegasus Business Park,  
East Midlands Airport, Castle Donington,  
DE74 2TU, UK.

**Start date (month/year):****Completion date (month/year):**

August 2006 / September 2006

**Number of professional staff-months provided by associated consultants:**

N/A

**Name of associated consultants, if any:**

N/A

**Name of senior professional staff of your firm involved and functions performed (indicate most significant profiles such as Project Director/Coordinator, Team Leader):**

Mark Gallani – Applied Scientist

**Narrative description of project:**

This is a yearly contract (since 1998) where the client (Central Networks) commissions our applied scientists to investigate the relationship of weather to known faults in their distribution area.

**Description of actual services provided by your staff within the assignment:**

Fault data is analysed, specifically-known lightning and wind-related faults. These data are then compared to known weather conditions and correlated into various tables. The objective is to assess whether Central Networks infrastructure is becoming more robust and the findings are referred to in the company's presentations to regulatory authorities.

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